

## ABSTRACT OF THE DISCLOSURE

A transmitter generates a pair of test weight vectors, each vector comprised of a plurality of complex entries, with each entry corresponding a different one of a plurality of antennae. The first and second complex weight vectors are applied to a dedicated pilot signal during alternate time intervals. During each time interval, the average of the first and second complex weight vectors is applied to the data traffic transmitted by the transmitter. A receiver alternately receives the pilot signal as multiplied by the first and second weight vectors as described above. The receiver determines which of the weighted pilot signals resulted in a stronger signal received at the mobile and, based upon this determination, transmits feedback. The transmitter receives the feedback and updates the first and second weights accordingly